SPECIFICATION

Title of the Invention :

FILE MANAGEMENT METHOD AND CONTENT

RECORDING/PLAYBACK APPARATUS

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FILE MANAGEMENT METHOD AND CONTENT RECORDING/PLAYBACK
APPARATUS

BACKGROUND OF THE INVENTION

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Field of the Invention

The present invention relates to a file management
method for content files stored on a recording medium,
a recording/playback apparatus that implements that

10   method, and a recording medium on which a program is
recorded in order to load that file management method,
and more particularly enables links to be maintained
between content files.

15   Description of the Related Art

Demand continues to grow for digital content
distribution services that employ communications and
broadcasting.

For example, a newspaper article distribution

20   service has been conceived of whereby newspaper articles
are downloaded each morning to a mobile phone and recorded
onto a recording medium connected to that mobile phone,
and an article can be read when wished by connecting that
recording medium to another device such as a television

25   set.   Also, an electronic book service has been conceived
of whereby a novel is divided into chapters, and
charging/downloading is performed chapter by chapter.

As a concrete example of a newspaper article distribution service, a method can be considered whereby newspaper articles are written as HTML format files, and one day's worth of HTML files and accompanying image files

5   or audio files are distributed as a single package. With a service that distributes related contents as a single package in this way, the distributed contents are generally recorded on a recording medium with a directory created for each package.

10   In this case, in the distributed package, an accompanying image file or audio file is linked to an HTML file. Moreover, a case can also be considered where a particular HTML file is linked to other HTML files. Furthermore, although links are generally implemented

15   as closed within a particular package, there are also cases where a link may be provided to an HTML file or image/audio file belonging to another package. A concrete example that can be given is a case where a particular newspaper article is linked to an article

20   distributed the previous day as a related article.

However, in an apparatus that receives content distribution, an original file name may be assigned to a content file in order to enable content recording and playback to be performed efficiently with simple

25   processing, and therefore the directory name and file name in the file system of content recorded in the receiving apparatus may not necessarily match reference names

written within other content linked to that content. As
a result, there is a problem of cases arising in which
a link destination cannot be specified.

Also, even in cases where a link destination can
5   be specified, it may not be possible to maintain the link
destination if the directory name or file name in the
file system is subsequently changed by the user.

Moreover, even in cases where a link destination
can be specified, unlike an interactive service such as
10 Web browsing, in a download service whereby referencing
is performed locally on a recording medium, the link
destination file may not necessarily be present on the
recording medium.

Heretofore, there have been no digital content
15 distribution services that take the above-described link
destination specification and maintenance into
consideration.

                    SUMMARY OF THE INVENTION
20   It is an object of the present invention to provide
a file management method that enables inter-content links
to be maintained even when distributed content is recorded
under a name that is different from the original content
file name, and also to provide a content
25 recording/playback apparatus for implementing that
method and a recording medium on which content files are
recorded in accordance with this file management method.

The present invention achieves the above objects by creating a directory for each package, managing the correspondence between a directory name and package identifier, managing the correspondence between the file name of content recorded in a package and the reference name when that content is linked from elsewhere, and managing the correspondence between the package identifier of another package and a reference name that indicates content included in that other package.

BRIEF DESCRIPTION OF THE DRAWINGS

The above and other objects and features of the invention will appear more fully hereinafter from a consideration of the following description taken in connection with the accompanying drawing wherein one example is illustrated by way of example, in which;

FIG.1 is a block diagram showing the configuration of a content recording/playback apparatus in Embodiment 1 of the present invention;

FIG.2 is a drawing showing an example of a newspaper article package in Embodiment 1 of the present invention;

FIG.3 is a drawing showing an example of directory and file configuration on a recording medium in Embodiment 1 of the present invention;

FIG.4 is a drawing showing an example of a package management file in Embodiment 1 of the present invention;

FIG.5 is a drawing showing an example of a content

file group management file in Embodiment 1 of the present invention;

FIG. 6 is a drawing showing an example of a newspaper article package in Embodiment 1 of the present invention;

5   FIG. 7 is a drawing showing an example of directory and file configuration on a recording medium in Embodiment 1 of the present invention;

FIG. 8 is a drawing showing an example of a package management file in Embodiment 1 of the present invention;

10   FIG. 9 is a drawing showing an example of a content file group management file in Embodiment 1 of the present invention;

FIG. 10 is a drawing showing an example of a link resolution file in Embodiment 1 of the present invention;

15   FIG. 11 is a drawing showing the processing flow of a link resolution section in Embodiment 1 of the present invention;

FIG. 12 is a drawing showing an example of a package management file created by a package management

20   information recording section in Embodiment 2 of the present invention;

FIG. 13 is a drawing showing an example of a content file group management file in Embodiment 2 of the present invention;

25   FIG. 14 is a drawing showing an example of a content file group management file in Embodiment 2 of the present invention;

FIG.15 is a drawing showing a case where a directory and file configuration directory name are changed in Embodiment 2 of the present invention;

FIG.16 is a drawing showing package management file rewriting in Embodiment 2 of the present invention;

FIG.17 is a block diagram showing the configuration of a content recording/playback apparatus in Embodiment 3 of the present invention;

FIG.18 is a drawing showing an example of a package identifier management table managed by a distribution server in Embodiment 3 of the present invention;

FIG.19 is a drawing showing an example of distribution package data distributed from a distribution server in Embodiment 3 of the present invention;

FIG.20 is a drawing showing an example of directory and file configuration on a recording medium in Embodiment 3 of the present invention;

FIG.21 is a drawing showing an example of a package management file in Embodiment 3 of the present invention;

FIG.22 is a drawing showing the processing flow of a link resolution section in Embodiment 3 of the present invention;

FIG.23 is a drawing showing the processing flow of a distribution reservation list file recording section in Embodiment 3 of the present invention;

FIG.24 is a drawing showing an example of directory and file configuration on a recording medium in Embodiment

3 of the present invention; and

FIG.25 is a drawing showing an example of a
distribution reservation list file in Embodiment 3 of
the present invention;

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DETAILED DESCRIPTION OF THE
PREFERRED EMBODIMENTS

With reference now to the accompanying drawings,
embodiments of the present invention will be explained

10 in detail below. It should be understood that the present
invention is in no way limited to these embodiments and
may be implemented in a variety of modes within a scope
consistent with the principles and novel features
disclosed herein.

15 (Embodiment 1)

FIG.1 is a block diagram showing the configuration
of a content recording/playback apparatus in Embodiment
1 of the present invention. This apparatus chiefly
comprises an input apparatus 110, recording medium 120,

20 content recording apparatus 130, content playback
apparatus 140, and display apparatus 150. The input
apparatus 110 inputs a content recording request from
a user to the content recording apparatus 130, and inputs
a content playback request from a user to the content

25 playback apparatus 140. The content recording apparatus
130 records package-unit content and file management
information on the recording medium 120. The content

playback apparatus 140 displays content recorded on the recording medium 120 on the display apparatus 150.

The content recording apparatus 130 comprises a package management information recording section 131,

5   content file recording section 132, and link resolution information recording section 133. The package management information recording section 131 creates package management information for managing packages recorded on the recording medium 120 and records it on

10   the recording medium 120. The content file recording section 132 records each content file of a content file group included in a package on the recording medium 120, and also creates content file group management information for managing these content file groups and

15   records it on the recording medium 120. The link resolution information recording section 133 creates link resolution information for implementing links between content files that straddle packages and records it on the recording medium 120.

20   The content playback apparatus 140 includes a content file acquisition section 141 and link resolution section 142. The content file acquisition section 141 receives a content playback command from the input apparatus 110, and acquires the specified file from the

25   recording medium 120. When there is a link specification in a content file, the link resolution section 142 performs processing to specify the link destination content file

based on link resolution information recorded on the recording medium 120.

Next, content recording processing and content playback processing performed by the content recording/playback apparatus in this embodiment will be described using actual examples.

<Content recording processing>

First, a content recording command is received from the user via the input apparatus 110. Here, the case where a recording command for the kind of newspaper article package shown in FIG.2 is received will be considered.

The newspaper article package in FIG.2 is a package for November 14, comprising HTML files 201 and 202 and an image file 203. HTML file 201 has the file name "001114index.htm", and has image file 203 with the file name "image1.jpg" embedded in it. HTML file 202 has the file name "001114page2.htm", and, as with HTML file 201, has image file 203 embedded in it. Also, HTML file 201 has a hyperlink to HTML file 202.

FIG.3 is a drawing showing an example of directory and file configuration on the recording medium 120, representing the time when the package shown in FIG.2 is recorded by the content recording apparatus 130. A directory 302 called "PKG00001" is created at the same level as the package management file 301, and below this directory 302 a content file group management file 303 and files included in the package shown in FIG.2 are created.

HTML files 201 and 202 and image file 203 included in the package shown in FIG.2 are assumed to be recorded with the file names "00001.htm", "00002.htm", and "00003.jpg", respectively.

5   When the content recording apparatus 130 receives a content recording command from the input apparatus 110, it first creates or updates the package management file 301 by means of the package management information recording section 131.

10   FIG.4 is a drawing showing an example of a package management file 301, representing the stage at which the package shown in FIG.2 is recorded on the recording medium 120. The package management file 301 manages the correspondence between a package directory number corresponding to the package directory name and a package identifier for uniquely identifying that directory.

15   In this embodiment, the description is based on a naming rule whereby the directory name of a package directory corresponding to a package directory number is designated "PKGxxxxx (xxxxx = package directory number)", as shown in FIG.3.

20   It should be understood that any naming rule may be used as long as it derives the directory name of a package directory uniquely from the package directory number.

25   Also, in FIG.4, the string "ARTICLE001114" is used as a package identifier, but as long as this package

identifier can uniquely identify a package directory existing on the recording medium 120, any kind of string, numerals, or symbols may be used.

Next, content file recording and content file group
5   management file creation are performed by the content file recording section 132.

FIG.5 is a drawing showing an example of a content file group management file 303, representing the stage at which the package shown in FIG.2 is recorded on the
10   recording medium 120. A content file group management file manages the correspondence between a content number corresponding to the file name when recorded on the recording medium 120 and a reference name when that content is linked from other content, and one content file group
15   management file is created for each package directory. The aforementioned content number is used to number an individual package.

In this embodiment, the description is based on a naming rule whereby the content file name corresponding
20   to a content number is designated "xxxxx.EXT (xxxxx = content number, EXT = original file name extension)", as shown in FIG.3.

It should be understood that any naming rule may be used as long as it derives the content file name on
25   the recording medium 120 uniquely from the content number.

As the package shown in FIG.2 has no link to content included in another package, the link resolution

information recording section 133 does not perform any processing in this case.

Furthermore, a case will be considered in which a recording command for the newspaper article package 610 shown in FIG.6 is newly generated when the recording medium 120 is in the state shown in FIG.3.

FIG.6 is a drawing showing an example of a newspaper article package for November 15 comprising an HTML file 611 and image file 612. HTML file 611 has the file name "001115page1.htm", and has image file 612 with the file name "logo1.jpg" embedded in it. Also, HTML file 611 has a hyperlink to HTML file 202 with reference name "001114index.htm" included in the newspaper article package for November 14 shown in FIG.2.

FIG.7 is a drawing showing an example of directory and file configuration on the recording medium 120, representing the time when newspaper article package 610 in FIG.6 is added by the content recording apparatus 130. A directory 701 called "PKG00002" is created at the same level as the package management file 301, and below this directory 701 a content file group management file 702 and files included in the package shown in FIG.6 are created. HTML files 611 and 612 included in the package shown in FIG.6 are assumed to be recorded with the file names "00001.htm" and "00002.jpg", respectively.

FIG.8 is a drawing showing an example of a package management file 301, representing the stage at which

newspaper article package 610 shown in FIG.6 is newly
added to the recording medium 120. Compared with FIG.4,
information concerning the newspaper article package of
November 15 has been newly added.

5   FIG.9 is a drawing showing an example of a content
file group management file 702, representing the stage
at which newspaper article package 610 shown in FIG.6
is newly added to the recording medium 120. The
configuration of the content file group management file
10   is similar to that in FIG.5, and so its description will
be omitted here.

As shown in FIG.6, HTML file 611 of the November
15 package has a link to content included in another package,
and therefore the link resolution file 703 shown in FIG.7
15   is created by the link resolution information recording
section 133.

FIG.10 is a drawing showing an example of a link
resolution file 703. A link resolution file manages the
correspondence between a reference name indicating a link
20   to content included in another package and the package
identifier of the package in which that link destination
content exists, and one link resolution file is created
for each package directory in which content including
a link that straddles packages exists.

25 <Content playback processing>

The case where a playback request for HTML file 201
shown in FIG.7 is issued via the input apparatus 110 will

be considered.

First, the content file acquisition section 141 acquires HTML file 201 from the recording medium 120.

As image file "image1.jpg" is embedded in HTML file 201, the link resolution section 142 resolves the reference of this image.

FIG.11 is a drawing showing the processing flow in the link resolution section 142. The reference resolution processing for image file "image1.jpg" will be described below with reference to FIG.11.

Step 1101: First, reference name "image1.jpg" is acquired from HTML file 201.

Step 1102: A check is carried out as to whether or not a link resolution file exists in the package directory to which the link source HTML file belongs. In this example, there is no link resolution file in the package directory 302 to which HTML file 201 belongs, so the processing flow proceeds to Step 1108.

Step 1108: The content file group management file of the package directory to which the HTML file belongs is looked at, the reference name acquired in Step 1101 is searched for, and the content number corresponding to this reference name is acquired. In this example, according to FIG.5, "00003" is acquired as the content number corresponding to reference name "image1.jpg".

Step 1109: The content file corresponding to the content number acquired in Step 1108 is specified as the

reference destination file.   In this example, as can be see from FIG.7, the "00003.jpg" image file 203 is specified, and the image reference is resolved.

The link resolution section 142 makes a content file
5   acquisition request to the content file acquisition section 141 using the reference destination file name specified in this way, and when the content file acquisition section 141 acquires reference destination file "00003.jpg" from the recording medium 120, this image
10   is embedded in HTML file 201 and output to the display apparatus 150.

This concludes the HTML file 201 playback processing.

Next, link resolution processing will be described
15   for the case where the user follows a link to content included in another package from HTML file 611 currently being displayed.

Step 1101: First, reference name "001114page2.htm" is acquired from HTML file 611.

20   Step 1102: A check is carried out as to whether or not a link resolution file exists in package directory 701 to which link source HTML file 611 belongs.   In this case, as can be seen from FIG.7, link resolution file 703 exists in package directory 701, so the processing
25   flow proceeds to Step 1103.

Step 1103: Link resolution file 703 is looked at, and a check is carried out as to whether or not there

is an entry for the reference name acquired in Step 1101.
As can be seen from FIG.10, a reference name
"001114page2.htm" entry exists in link resolution file
703, so the processing flow proceeds to Step 1105 via
5   Step 1104.   If there were no entry in link resolution file
703, the processing flow would proceed to Step 1108 via
Step 1104.

     Step 1105: Package identifier "ARTICLE001114"
corresponding to reference name "001114page2.htm" is
10   acquired, and the processing flow proceeds to Step 1106.

     Step 1106: Package number "00001" corresponding to
the above-mentioned acquired package identifier
"ARTICLE001114" is ascertained from package management
file 301, and it is determined that the package in which
15   the reference destination file exists is package
directory 302 (PKG00001).

     Step 1107: Next, content file group management file
301 of package directory 302 is looked at, the reference
name acquired in Step 1101 is searched for, and the content
20   number corresponding to this reference name is acquired.
In this example, according to FIG.5, "00002" is acquired
as the content number corresponding to reference name
"001114page2.htm".

     Step 1109: Content file "00002.htm" 202
25   corresponding to the content number acquired in Step 1107
is specified, and links to contents included in other
packages are resolved.

As described above, with this embodiment, a package management file that manages the correspondence between a package directory number corresponding to a package directory name and a package identifier for uniquely

5   identifying that directory, and a content file group management file that manages the correspondence between a content number uniquely corresponding to a file name when recorded on the recording medium 120 and a reference name when linked from other content, are created. Then,

10   by using these management files, it is possible to specify a link destination even if the directory name or file name when content is recorded on the recording medium 120 is different from the reference name written in other content linked to that content.

15   Moreover, a link resolution file that manages the correspondence between a reference name indicating a link to content included in another package and the package identifier of the package in which that link destination content exists is created for each package directory in

20   which content including a link that straddles packages exists. By using these link resolution files, it is possible to follow links to contents belonging to other packages.

Also, according to this embodiment, the file name

25   of a file recorded on the recording medium can be set arbitrarily, providing an effective resolution means when there is a limit to the number of characters in a file

name.

Furthermore, in this embodiment, the configuration of a link resolution file has been described as being a simple correspondence table of reference names and package identifiers, but in order to search for a reference name at high speed when performing link resolution, means such as a hash method or B-tree may be used.

Also, in this embodiment, HTML files and image files have been given as examples of content files, but a content file may also be a file of any other format.

(Embodiment 2)

In Embodiment 2, a file management method is described that enables a link destination to be maintained even if a directory name or file name is changed by the user.

The configuration of the content recording/playback apparatus in this embodiment is identical to that shown in FIG.1. However, in this embodiment, the component elements of a package management file created by the package management information recording section 131 and the component elements of a content file group management file created by the content file recording section 132 differ from those in Embodiment 1.

Next, content recording processing and content playback processing in this embodiment will be described in concrete terms.

The directory and file configurations on the

recording medium 120 when the packages shown in FIG.2 and FIG.6 are recorded by the content recording apparatus 130 are the same as in FIG.7. However, the contents of package management file 301 and content file group management files 303 and 702 are different, and therefore the codes package management file 1201 and content file group management file 1301 and 1401 will be used in the following description.

FIG.12 is a drawing showing an example of a package management file 1201 created by the package management information recording section 131. The difference from FIG.8 of Embodiment 1 is that this package management file 1201 manages the correspondence between a package directory name recorded on the recording medium 120—not a package directory number—and a package identifier.

FIG.13 is a drawing showing an example of a content file group management file 1301. The difference from FIG.5 of Embodiment 1 is that the correspondence managed is between a content file name on the recording medium 120—not a content number—and a reference name.

Similarly, FIG.14 is a drawing showing an example of a content file group management file 1401 at this time.

In this embodiment, unlike Embodiment 1, no particular naming rule is established for package directory names and content file names on the recording medium 120, and arbitrary names can be assigned.

The operation of the content file acquisition

section 141 in content playback processing in this
embodiment is similar to that in Embodiment 1.

Processing by the link resolution section 142 in
content playback processing in this embodiment is similar
5   to that in Embodiment 1, except for the following three
points.

a) In Step 1106, when specifying the package directory,
specification is not performed according to a naming rule
based on the package number corresponding to the package
10 identifier, but instead the package directory name
corresponding to the package identifier is acquired
directly.

b) In Step 1107, the content file number is not acquired,
but instead the content file name is acquired directly.

15 c) In Step 1108, the content file number is not acquired,
but instead the content file name is acquired directly.

By this means, the same kind of link resolution
effect is obtained as in Embodiment 1.

Here, a case will be considered in which the
20 directory name of package directory 302 is changed from
"PKG00001" to "November 14 Article" by means of an
operation of some kind, as shown in FIG.15.   In this case,
along with the processing whereby the directory name is
changed in the file system, the package management
25 information recording section 131 rewrites the relevant
package directory name part in the package management
file as shown in FIG.16.   By this means, a link destination

can be maintained even if a directory name change occurs after the directory name has been recorded on the recording medium 120.

Similarly, when a content file name on the recording

5 medium 120, not a package directory, is changed, the content file recording section 132 can maintain the link destination by changing the relevant content file name part in the content file group management file.

As described above, with this embodiment, when a

10 package directory name or content file name is changed by means of an operation of some kind, a link destination can be constantly maintained by changing the relevant package directory name part in the corresponding package management file, or the relevant content file name in

15 the content file group management file.

(Embodiment 3)

In Embodiment 3, a method is described for performing distribution reservation when another package including the link destination file does not exist on the recording

20 medium.

FIG.17 is a block diagram showing the configuration of a content recording/playback apparatus in Embodiment 3 of the present invention. Parts in the content recording/playback apparatus in FIG.17 identical to those

25 in FIG.1 are assigned the same codes as in FIG.1 and their detailed explanations are omitted. Compared with FIG.1, the configuration of the content recording/playback

apparatus in FIG.17 features the addition of a distribution reservation list file recording section 143 for creating a distribution reservation list file to the content playback apparatus 140.

5   A distribution server that provides service to the content recording/playback apparatus in FIG.17 assigns a package identifier to each package to be distributed, and manages the correspondence between distribution package data and package identifiers.

10   FIG.18 is a drawing showing an example of a package identifier management table held by a distribution server in order to manage the correspondence between distribution packages and package identifiers. This package identifier management table contains package 15   identifiers and pointers to distribution package data to which the corresponding package identifiers are assigned.

If a package file contains a link to content included in another package, the distribution server references 20   the package identifier management table and creates a link resolution file provided with the correspondence between the reference name indicating the link to that content and the package identifier of the package in which the link destination content exists, and distributes this 25   included in the package data.

FIG.19 is a drawing showing distribution package data distributed when the distribution server distributes

package 610 shown in FIG.6. The distribution package data
includes a distribution-time metadata file in which
metadata such as content related bibliographic matter,
management information, and attribute information is

5 recorded, a link resolution file, and content files with
the file names "001115page1.htm" and "logo1.jpg".
Package identifier information is recorded in the
distribution-time metadata file. The link resolution
file has the same contents as in FIG.10.

10 When this distribution package data is input, the
package management information recording section 131 of
the content recording apparatus 130 creates a package
management file using a package identifier assigned by
the distribution server. Also, if a link resolution file

15 is included in the distribution package data, the link
resolution information recording section 133 stores this
link resolution file on the recording medium 120. The
operation of the content file recording section 132 is
the same as in Embodiment 1.

20 The case will now be considered in which only the
package shown in FIG.6 has been recorded on the recording
medium 120 by the content recording apparatus 130. FIG.20
is a drawing showing the directory and file configuration
on the recording medium 120 at this time. FIG.20 differs

25 from FIG.7 in having no directory 302, content file group
management file 303, HTML files 201 and 202, or image
file 203, and in that the contents of package management

file 2001 are different from those of package management
file 301. Content file group management file 702 and link
resolution file 703 under directory 701 are the same as
in FIG.9 and FIG.10, respectively, in Embodiment 1.

5   FIG.21 is a drawing showing an example of a package
management file 2001. Package management file 2001
manages the correspondence between a package directory
number corresponding to the package directory name and
a package identifier for uniquely identifying that
10   directory.

     Link resolution processing will be described below
for the case where the user follows a link to content
included in another package from HTML file 611 currently
being displayed.

15   FIG.22 is a drawing showing the processing flow in
the link resolution section 142 in Embodiment 3. Steps
in FIG.22 identical to those in FIG.11 are assigned the
same codes as in FIG.11. When the processing flow
proceeds to Step 1106, Step 1107, Step 1108, or Step 1109
20   in FIG.22, the processing is the same as in FIG.11, and
the relevant description is omitted.

     Step 1101: First, reference name "001114page2.htm"
is acquired from HTML file 611.

     Step 1102: A check is carried out as to whether or
25   not a link resolution file exists in package directory
701 to which link source HTML file 611 belongs. In this
case, as can be seen from FIG.20, link resolution file

703 exists in package directory 701, so the processing
flow proceeds to Step 1103. If there were no link
resolution file 703, the processing flow would proceed
to Step 1108.

5   Step 1103: Link resolution file 703 is looked at,
and a check is carried out as to whether or not there
is an entry for the reference name acquired in Step 1101.
As can be seen from FIG.10, a reference name
"001114page2.htm" entry exists in link resolution file

10   703, so the processing flow proceeds to Step 1105 via
Step 1104. If there were no entry in link resolution file
703, the processing flow would proceed to Step 1108 via
Step 1104.

      Step 1105: Package identifier "ARTICLE001114"

15   corresponding to reference name "001114page2.htm" is
acquired, and the processing flow proceeds to Step 2201.

      Step 2201: A check is carried out as to whether or
not there is an entry for the above-mentioned acquired
package identifier "ARTICLE001114" in package management

20   file 2001. In this case, as can be seen from FIG.21, there
is no entry, so the processing flow proceeds to Step 2202.
If there were an acquired package identifier entry, the
processing flow would proceed to Step 1106.

      Step 2202: Distribution reservation list file

25   recording section 143 processing is executed.

      FIG.23 is a drawing showing the processing flow of
the distribution reservation list file recording section

143 in Embodiment 3.

Step 2301: First, a check is carried out as to whether or not the user wants the package that includes the reference destination file to be distributed when connection is established with the distribution server the next time distribution is performed. If distribution is not wanted, nothing is done and processing ends. If distribution is wanted, the processing flow proceeds to Step 2302.

Step 2302: The above-mentioned acquired package identifier "ARTICLE001114" is entered in the distribution reservation list file. FIG.24 is a drawing showing an example of directory and file configuration on the recording medium 120 at this time, and includes a distribution reservation list file 2401 in addition to the items in FIG.20. FIG.25 is a drawing showing an example of the distribution reservation list file 2401. In Step 2302, if a distribution reservation list file does not exist on the recording medium 120, one is newly created.

If a distribution reservation list file 2401 exists on the recording medium 120 in this way when connection is subsequently established between the content recording apparatus and distribution server for the purpose of distribution, the package identifier entered in the distribution reservation list file 2401 is transmitted to the distribution server. The distribution server

finds the package corresponding to that package identifier from the package identifier management table, and performs download processing for that package.

When the package that has the same package identifier
5   as the package identifier record in the distribution reservation list file 2401 is distributed from the distribution server, the distribution reservation list file recording section 143 deletes the distribution reservation list file as soon as the download of that
10 package is completed.

As described above, in this embodiment a distribution reservation list file recording section 143 is provided, and by creating a distribution reservation list file in which is entered the package identifier of
15 a package that does not exist on the recording medium 120, the necessary package can be downloaded automatically when connection is next established with the distribution server, without requiring the user to perform any particular operation.

20 In this embodiment, a method is described whereby the distribution reservation list file is stored beforehand on the recording medium 120, but a method may also be used whereby the distribution reservation list file is stored, not on the recording medium 120, but in
25 a storage area in a content recording/playback apparatus equipped with a content recording apparatus 130 and content playback apparatus 140.

Also, in this embodiment, a description has been
given in which the distribution reservation list file
is deleted as soon as the download of a package entered
in the distribution reservation list file is completed,
5   but a method may also be adopted whereby the distribution
reservation list file is not deleted, but the file contents
are reset.

Furthermore, in the above-described embodiments,
a case is described in which a link resolution file is
10   created by a link resolution information recording
section 133 of a content recording apparatus 130, but
the present invention is not limited to this, and it is
also possible for a link resolution file to be additionally
created on the content distribution side, and distributed
15   together with the content.

Moreover, it is also possible for playback and
display of recorded content to be performed with the
recording medium 120, on which content and file management
information are recorded by the content recording
20   apparatus 130, installed in another content playback
apparatus.

In addition, it is also possible for the procedures
in the file management method of the present invention
to be recorded on a recording medium, and for this recording
25   medium to be installed in a content recording/playback
apparatus, and the procedures of the file management
method of the present invention to be downloaded to the

content recording/playback apparatus.

As is clear from the above descriptions, according to the present invention it is possible to specify a link destination even if the directory name or file name when content is recorded on a recording medium is different from a reference name written in other content linked to that content. Also, link destination content can be specified even if the link destination content belongs to a different package.

Moreover, a link destination can be constantly maintained even if the file name or directory name of a content file is rewritten by a user after that file has been recorded on a recording medium.

Furthermore, the content recording/playback apparatus of the present invention that implements this file management method can maintain a content link destination even if an original name is automatically assigned to distributed content or a user rewrites the file name or directory name, enabling content to be displayed edited as desired.

Still further, if a package that includes a reference destination file does not exist on the recording medium, the necessary package can be downloaded automatically when connection is next established with the distribution server, without requiring the user to perform any particular operation.

The present invention is not limited to the above

described embodiments, and various variations and modifications may be possible without departing from the scope of the present invention.

This application is based on Japanese Patent Application No. 2000-354660 filed on November 21, 2000, and Japanese Patent Application No. 2001-013720 filed on January 22, 2001, entire content of which is expressly incorporated by reference herein.